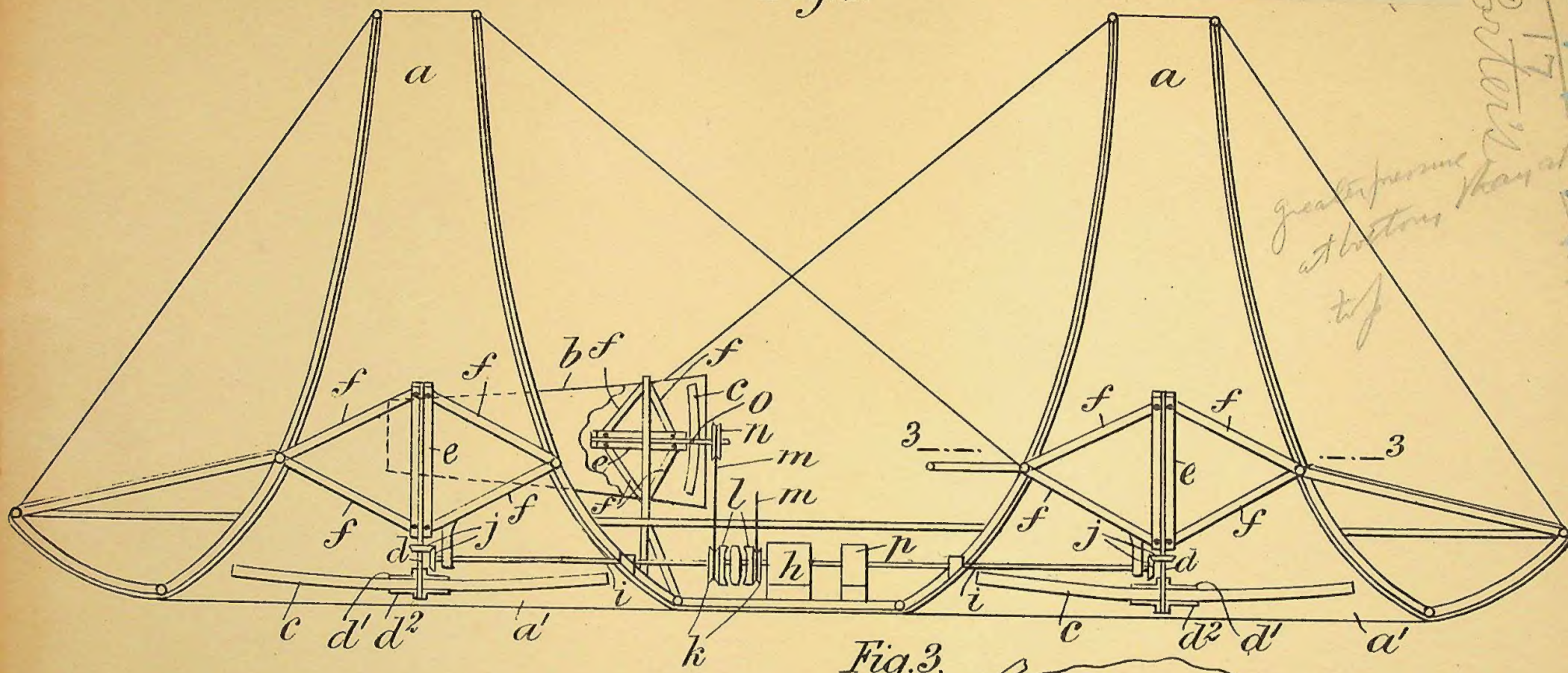


170-135.2

4/16
12/19

Fig.1.



greater pressure
at bottom
top

244-17
17
Boston
May 18

Fig.2.

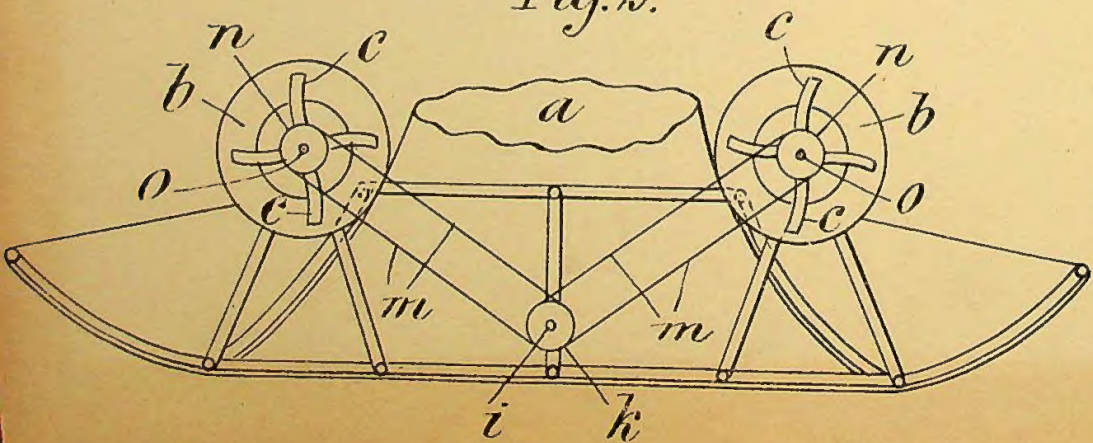
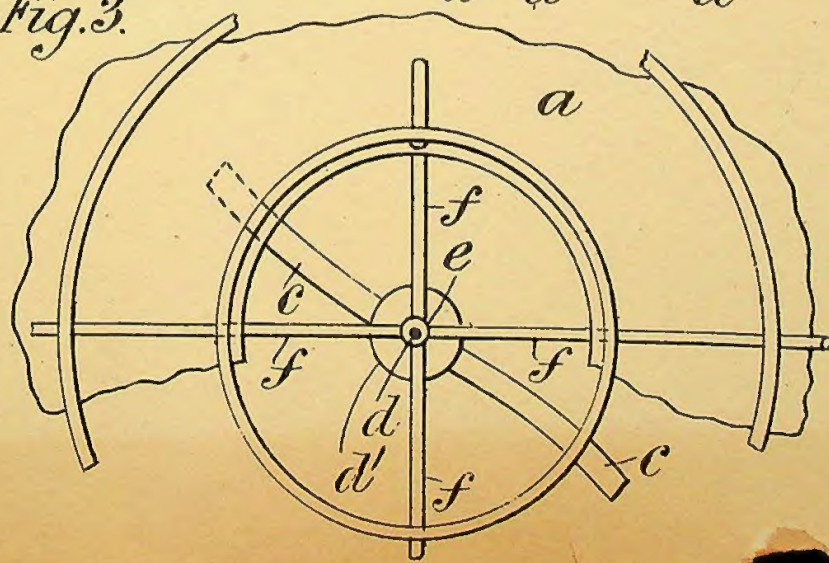


Fig.3.



15-579
60

N^o 15,590

A.D. 1907

DUPLICATE

Date of Application, 6th July, 1907

Complete Specification Left, 2nd Jan., 1908—Accepted, 2nd July, 1908

PROVISIONAL SPECIFICATION.

"Improvements in Air Ships and in Apparatus for Propelling the same."

I, JAMES ROBERTSON PORTER, of 9 Gray's Inn Square, in the County of Middlesex, Civil Engineer, do hereby declare the nature of this invention to be as follows:—

5 This invention relates to improvements with respect to the type of air ship for which Application for Patent No. 4245⁹⁷ has been made by me, wherein a current of air is made to flow in vertical and horizontal cylinders by means of screw propellers, or otherwise, thereby imparting motion to the ship; these cylinders being constructed with conical end pieces which finally terminate in flared outlets.

10 According to this invention propellers are used to create the air current within the expanding end of the cylinders the air being drawn through the smaller ends of the cylinders and expelled through the larger ends.

The blades of the propeller may curve downwards or may first curve downwards and then turn into a plane almost at right angles to the propeller shaft thus making the blade first convex and then concave to the stream of air. 15 These blades may be attached to the shaft by means of two discs which are shrunk onto and secured to a boss on the shaft, the blades being secured between the two discs.

Propellers made in accordance with this invention maintain a considerable 20 difference of pressure in the air at the bottom of the tube compared with the top, or in other words have considerable manometric efficiency. Motion is conveyed to the propeller by means of gearing or belts, from either a petrol engine or steam reciprocating engine, or steam turbine fixed to the floor of the airship.

25 Dated this 6th day of July 1907.

J. R. PORTER.

COMPLETE SPECIFICATION.

"Improvements in Air Ships and in Apparatus for Propelling the same."

30 I, JAMES ROBERTSON PORTER, of 9 Gray's Inn Square, in the County of Middlesex, Civil Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements with respect to the type of air ship 35 for which an Application for a Patent No. 4245⁹⁷ has been applied for by me, [Price 8d.]

Improvements in Air Ships and in Apparatus for Propelling the same.

wherein a current of air is made to flow in vertical and horizontal cylinders by means of screw propellers, or otherwise, thereby imparting motion to the ship; each cylinder being constructed with a conical end.

According to this invention propellers are used to create the air current within the expanding end of the cylinders the air being drawn through the smaller ends of the cylinders and expelled through the larger ends.

The drawings illustrate an airship made in accordance this invention.

Figure 1 is a longitudinal section, Figure 2 a transverse section, and Figure 3 a section on the line 3—3, Figure 1.

a a are vertical cylinders having outlets *a' a'* of gradually increasing diameter and *b b* are horizontal cylinders of similar shape. In the larger end of each cylinder is a propeller *c* mounted on a shaft *d* carried by a tubular bearing *e* which is supported in the cylinder by struts *f*. The propeller blades are secured to the shaft *d* by two discs *d' d''* shrunk or otherwise attached to the shaft.

Motion is imparted to the propellers fixed in the vertical cylinders by means of a motor *h* fixed near the centre of the airship, a cardan shaft *i* and bevel wheels *j*.

Motion is imparted to the propellers fixed in the horizontal cylinders by means of loose pulleys *k* on the shaft *i* connected to friction clutches *l*; the pulleys *k* are connected by belts *m* to pulleys *n* keyed to the shaft *o* carrying the propellers *c* within the horizontal cylinders *b*. If desired a gear box *p* containing gear for regulating the relative speeds of the vertical and horizontal propellers may be provided.

The method of raising and propelling the airship is as follows:—Assuming the airship to be at rest on any fairly level surface of ground, or on water, the propellers within the vertical cylinders are first put in action, upon a sufficient elevation above the earth being obtained, the friction clutches attached to the loose pulleys on the shaft are brought into action, with the result that a certain proportion of power is transferred to the propellers within the horizontal cylinders resulting in a forward movement in a horizontal direction, steering being accomplished by putting one of the horizontal cylinders out of action. In the event of the machinery failing, the bottom of the airship will act as a parachute, and a quantity of air will be driven through the vertical cylinders setting up a certain amount of resistance and a steadying action is produced due to the air travelling within these cylinders with the result that the airship will descend safely to earth.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. In an airship, a cylinder having an outlet of gradually increasing diameter, and a propeller in the outlet for drawing air through the smaller end of the cylinder and expelling it from the larger end, substantially as described.

2. Airships substantially as described and illustrated in the drawings.

Dated this 23rd day of December 1907.

J. R. PORTER.